CONNECTICUT DEPARTMENT OF PUBLIC HEALTH

Asthma *in Connecticut*

UPDATE

May 2003

CONNECTICUT DEPARTMENT OF PUBLIC HEALTH

Keeping Connecticut Healthy

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Governor John G. Rowland
Commissioner Jaxel Garcia, M.D., M.B.A.

Acknowledgements

State of Connecticut Department of Public Health
Bureau of Community Health

Ardell A. Wilson, DDS, MPH
Bureau Chief

Renee D. Coleman-Mitchell, MPH
Director
Office of Asthma and Childhood Lead

Prepared by:

Patricia Miskell, MPH
Epidemiologist
Office of Asthma and Childhood Lead

Mary Adams, MPH
Epidemiologist
Bureau of Community Health

Mary Alice Lee, PhD
Assistant Director
Connecticut Children's Health Council

We gratefully acknowledge the contributions of the following:

Asthma Program Staff

Sandra Ferreira, BS
Health Program Assistant

Ann Horan, RN
Nurse Consultant

Joan Simpson, MSPH
Asthma Education Specialist

Asthma Surveillance Committee

Cheryl Carotenuti, RN, MSN
State Department of Education

Patricia Checko, MPH, DrPH
Bristol-Burlington Health District

Mary Lou Fleissner, DrPH
Department of Public Health

Pamela Kilby-Fox, MPH
New London Health Department

Lloyd Mueller, PhD
Department of Public Health

Thomas St. Louis, MSPH
Department of Public Health

Eileen Story, MD, MPH
University of Connecticut Health Center

Introduction

In 2001, the Connecticut Department of Public Health (CT DPH) Asthma Program released a report, "Asthma in Connecticut", that provided a summary of the available asthma surveillance data. This report provides an update of that information, incorporating the most recently available data.

Data from four sources are presented here:

- Behavioral Risk Factor Surveillance System (BRFSS)
- Children's Health Council – Medicaid managed care data
- CHIME, Inc. – Hospitalization and Emergency Department usage data
- CT DPH's Occupational Disease Surveillance System (ODSS)

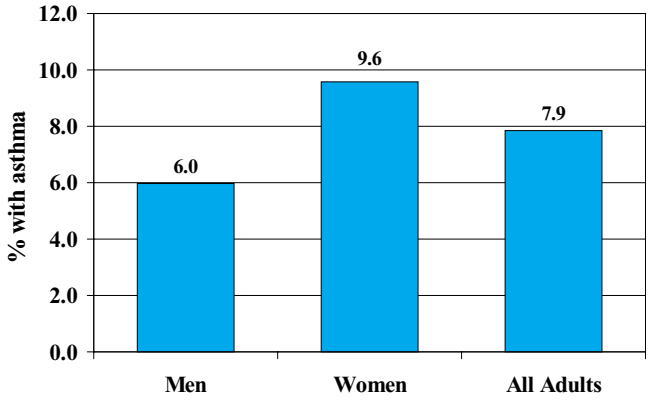
Much of the reported data is expressed as a rate (the number of events per 10,000 population). These rates were calculated by dividing the number of health events (i.e., deaths, disease) in the population or subgroup by the total number of people in that population or subgroup, multiplied by 10,000. Prevalence estimates, also called prevalence rates, refer to the number of people per 10,000 with a certain disease at a given point in time. In this report, prevalence rates were estimated from the BRFSS and Medicaid managed care data.

Prevalence Estimates Using the Behavioral Risk Factor Surveillance System

The Behavioral Risk Factor Surveillance System (BRFSS) is an ongoing telephone survey that asks questions about a variety of health topics – including asthma. The most recent data available are for the year 2001 and the results are reported below. All results presented are for individuals who report currently having asthma.

ADULTS

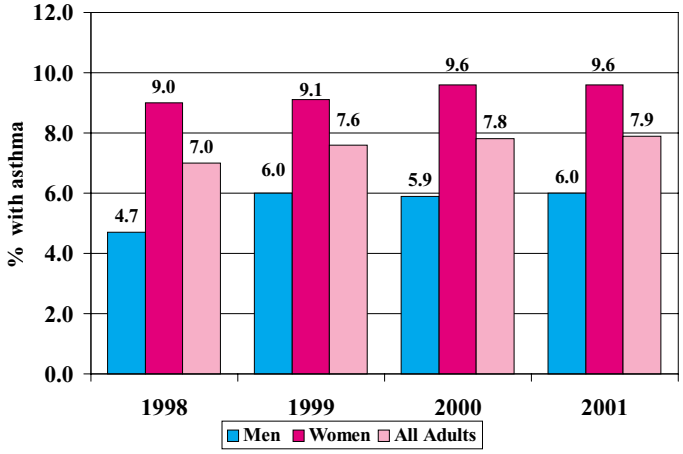
Asthma Prevalence by Sex, Connecticut Adults, BRFSS 2001



In Connecticut, the overall prevalence of asthma among adults age 18 years and over in 2001 was 7.9%. The prevalence was significantly higher for women (9.6%) compared to men (6.0%).

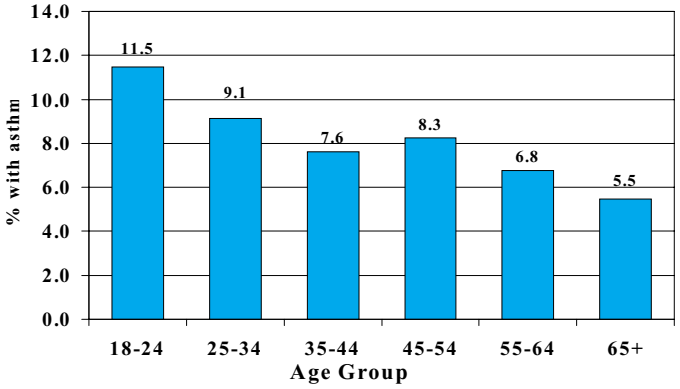
In Connecticut, approximately 202,000 adults have asthma.

Asthma Prevalence by Year, Connecticut Adults, BRFSS



The prevalence of asthma among men and women age 18 years and over remained relatively stable from 1998 through 2001. For each year, the prevalence of asthma among women was higher than among men.

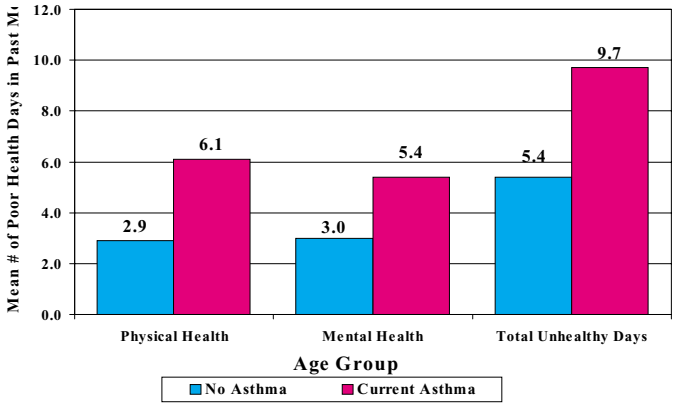
Asthma Prevalence by Age Group,
Connecticut Adults, BRFSS 2001



Among adults, asthma prevalence was significantly associated with age group, where rates were higher among the younger age groups.

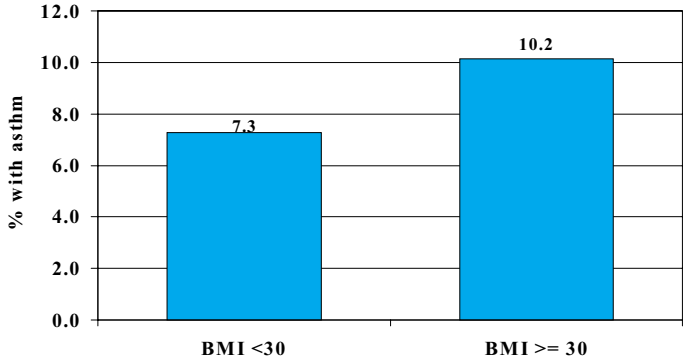
Racial and ethnic differences in asthma prevalence among adults were not statistically significant.

Poor Health Days by Asthma Status,
Connecticut Adults, BRFSS 2001



Compared to adults without asthma, adults with current asthma reported more days of poor mental or physical health in the past month. Adults with asthma reported an average of 4.3 more days of poor health in the past month (including both physical and mental health) compared to adults without asthma.

Asthma Prevalence by Body Mass Index,
Connecticut Adults, BRFSS 2001

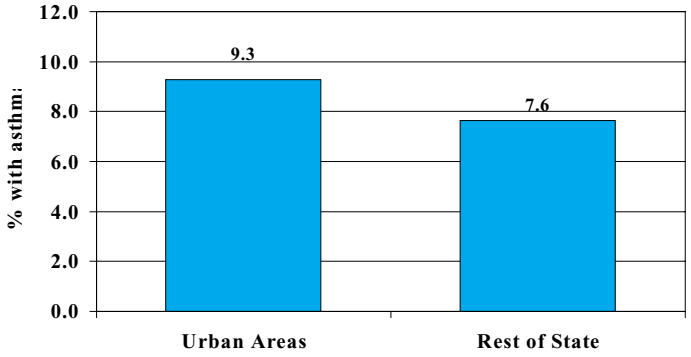


Obese adults, those with a body mass index (BMI) of 30 or more, were significantly more likely to report asthma than those with a BMI under 30.

The prevalence of asthma was not higher among smokers or those who reported being physically inactive.

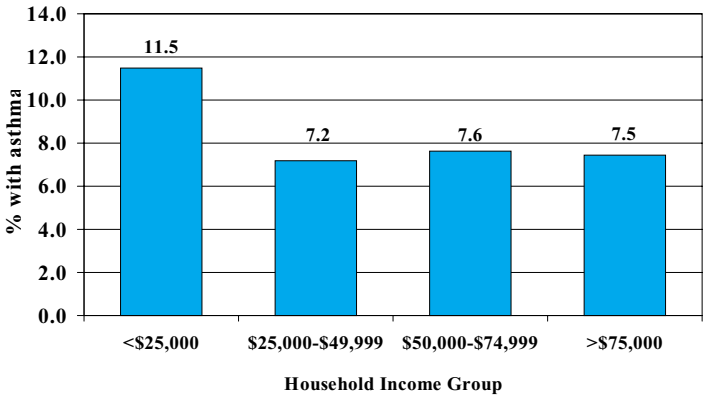
Note: BMI = $\frac{\text{Weight in Kilograms}}{(\text{Height in Meters})^2}$

Asthma Prevalence by Geographic Area,
Connecticut Adults, BRFSS 2001



The prevalence of adult asthma in urban areas of the state (Hartford, Bridgeport, New Haven, Stamford, and Waterbury) was similar to the prevalence of asthma in the rest of the state.

Asthma Prevalence by Household Income,
Connecticut Adults, BRFSS 2001



Adult asthma prevalence was significantly associated with household income. The highest rate of asthma was seen among adults in the lowest income group (less than $25,000).

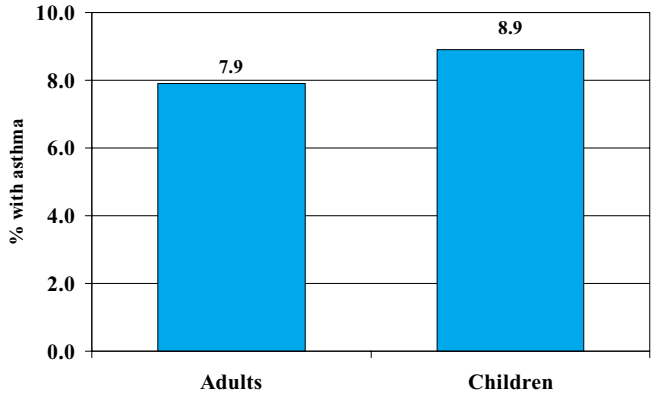
Asthma Prevalence by Employment Status,
Connecticut Adults, BRFSS 2001

Adult asthma prevalence was significantly associated with employment status. The prevalence of asthma was higher among adults who were unemployed (12.4%) or unable to work (20.6%) compared to adults who were employed (7.5%).

Among adults with asthma, 14.6% were either unemployed or unable to work compared to 6.6% of adults who did not have asthma. (Data not shown.)

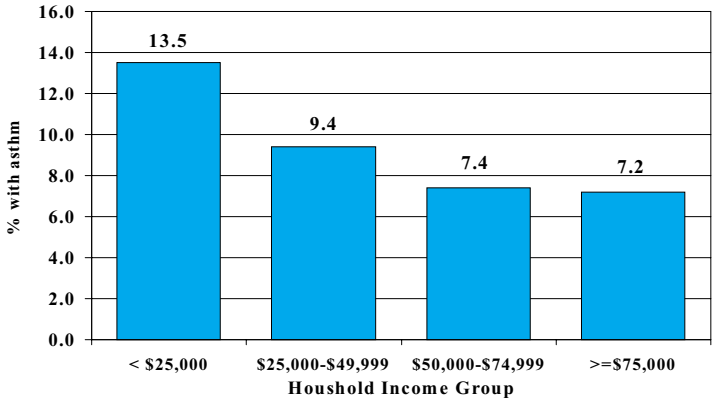
CHILDREN

Asthma Prevalence in Connecticut, BRFSS 2001



The prevalence of asthma among children under age 18 years (8.9%) in Connecticut was greater than the prevalence among adults age 18 years and over (7.9%). Approximately 75,000 children in Connecticut have asthma.

Asthma Prevalence by Household Income, Connecticut Children, BRFSS 2001



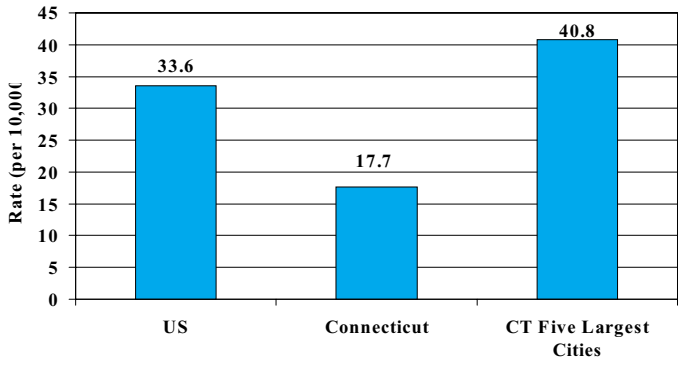
The prevalence of asthma among children in households in the lowest income group (less than $25,000) was significantly higher than among children in households with higher incomes.

Hospitalization and Emergency Department Utilization for Asthma Among Connecticut Children

Data on hospitalization and emergency department (ED) utilization for asthma are available from CHIME, Inc., an affiliate of the Connecticut Hospital Association. Presented below are data for the years 1992-1998, which were previously released, and updated data for the years 1999 and 2000. Unless otherwise noted, all information presented here is for hospital admissions or ED visits with a primary diagnosis of asthma.

Rates for 1999 and 2000 were calculated using population data from the 2000 Census; therefore, they may not be comparable to rates for previous years, which were calculated using 1990 Census data. It is important to remember that this data represents visits or admissions and not individuals. Therefore, rates should be interpreted as the number of visits or admissions per 10,000 children.

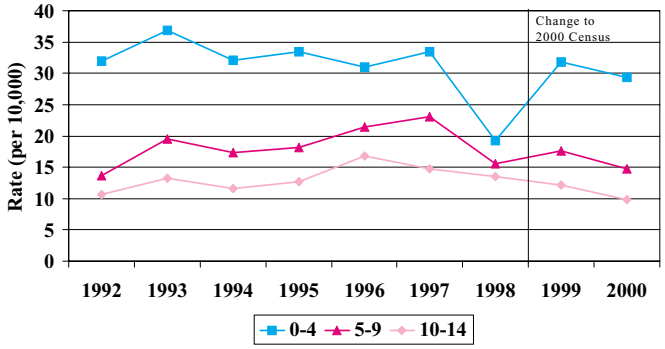
Asthma Hospitalization Rates,
Children Age 0-14 years, US and Connecticut, 2000



The asthma hospitalization rate for children in Connecticut was lower than that for children in the United States. However, the asthma hospitalization rate for children in Connecticut's five largest cities (Bridgeport, Hartford, New Haven, Stamford and Waterbury) was higher than the rate for the entire state and the US.

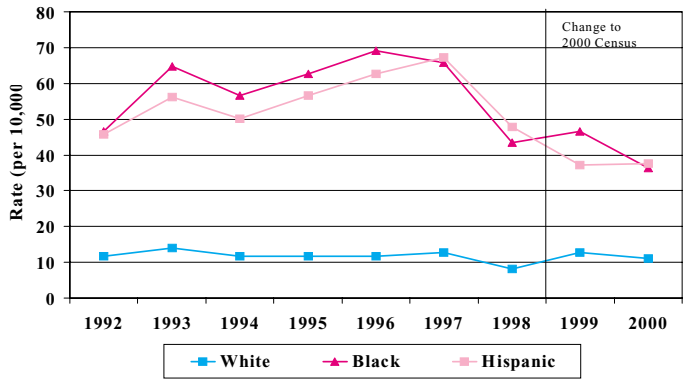
(See Technical Notes for more information about the calculation of the US rate.)

Asthma Hospitalization Rates by Age Group and Year,
Children Age 0-14 years, Connecticut 1992-2000



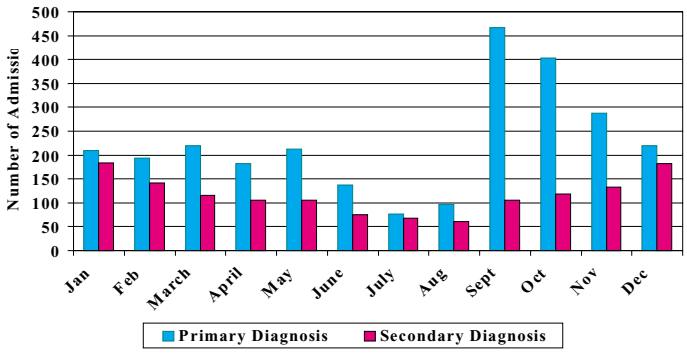
From 1992-2000, asthma hospitalization rates in Connecticut were consistently highest among the youngest age group, ages 0-4 years. This is consistent with similar US data. In Connecticut, the average annual hospitalization rate for children ages 0-4 years was 31.1/10,000.

Asthma Hospitalization Rates by Race/Ethnicity and Year, Children Age 0-14 years, Connecticut 1992-2000



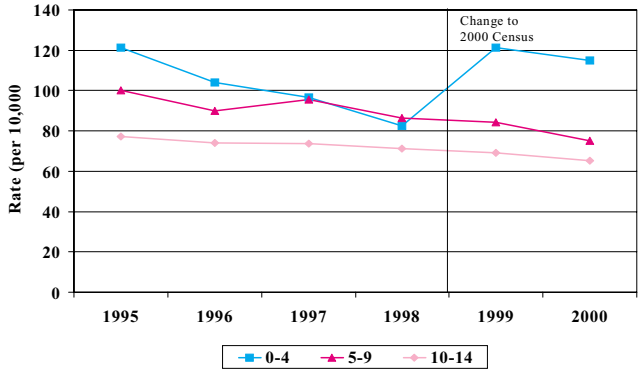
From 1992-2000, asthma hospitalization rates for black and Hispanic children were consistently higher than the rate for white children. In Connecticut, the average annual hospitalization rate for black children was 54.7/10,000. This was almost five-times higher than the average annual hospitalization rate for white children in Connecticut during this same time-period.

Asthma Hospitalizations by Month, Children Age 0-14 years, Connecticut 1999-2000



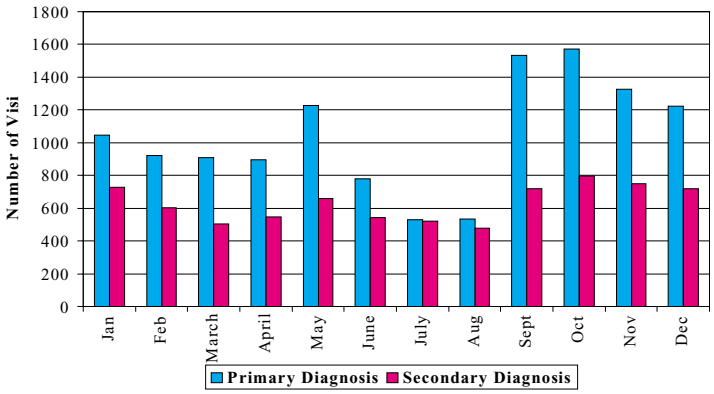
From 1999-2000, hospitalizations with a primary diagnosis of asthma showed a seasonal pattern, with more hospitalizations occurring in the fall. The fewest hospitalizations occurred during the summer months. There was no clearly defined pattern among hospitalizations with asthma as a secondary diagnosis.

Asthma ED Rates by Age Group and Year, Children Age 0-14 years, Connecticut 1995-2000



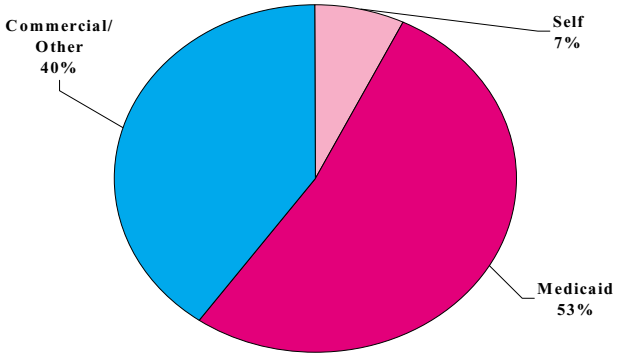
In Connecticut, there were approximately 6,000 ED visits for asthma among children ages 0-14 years each year from 1995-2000. During this time, ED rates were generally higher among the younger age groups.

Asthma ED Visits by Month,
Children Age 0-14 years, Connecticut 1999-2000



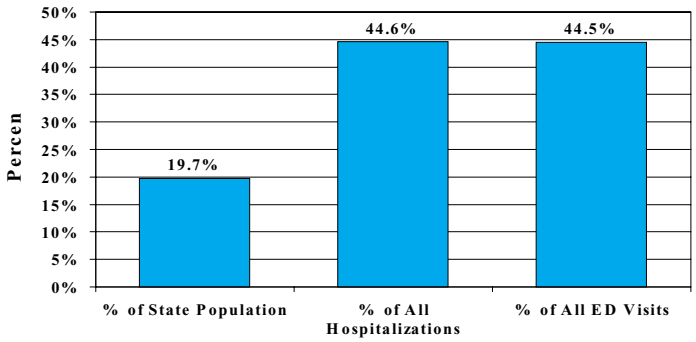
ED visits with a primary diagnosis of asthma also showed a seasonal pattern from 1999-2000, with more ED visits occurring in the fall. The fewest number of ED visits occurred in the summer months. ED visits with a secondary diagnosis of asthma did not show this seasonal variation but rather remained relatively constant throughout the year. This is similar to the pattern seen from 1995-1998.

Asthma ED Visits by Payer,
Children Age 0-14 years, Connecticut 1999-2000



Medicaid was the primary payer for the majority of ED visits with a primary diagnosis of asthma, suggesting that children in lower socioeconomic groups are more likely to use the ED for asthma care. This pattern is very similar to what was seen from 1995-1998 and may reflect more severe or more poorly managed asthma among children in lower socioeconomic populations. In addition, children in lower socioeconomic populations may lack a regular source of medical care and thus use the ED as a primary care provider.

Asthma Hospitalizations and ED Visits in Five Major Cities,
Children Age 0-14 years, Connecticut 1999-2000



Although only approximately 20% of Connecticut's children ages 0-14 years live in the state's five largest cities (Bridgeport, Hartford, New Haven, Stamford, and Waterbury), children in these cities accounted for nearly 45% of all hospitalizations and ED visits in this age group. Thus, children living in larger cities accounted for a disproportionate amount of hospital and ED usage for asthma. This pattern is similar to that which was previously reported.

Asthma Emergency Department Visits by Town
Children Age 0-14 Years, Connecticut 1999-2000

(Towns with less than 10 ED visits are omitted from table)

Town	Number of Visits	1999-2000 Rate (per 10,000)
Ansonia	84	109.9
Avon	11	15.7
Beacon Falls	10	45.8
Berlin	10	13.5
Bethel	21	25.7
Bloomfield	59	83.4
Branford	23	23.1
Bridgeport	1258	182.7
Bristol	285	121.3
Brookfield	23	31.7
Burlington	12	30.8
Cheshire	31	26.7
Clinton	25	45.7
Colchester/Salem	49	51.9
Coventry	20	38.3
Cromwell	18	39.4
Danbury	220	79.6
Darien	35	30.9
Deep River/Killingworth	19	41.1
Derby	48	105.2
East Haddam	10	28.1
East Hampton	35	74.9
East Hartford	275	135.1
East Haven	67	63.5
East Lyme	21	31.9
East Windsor	11	29.9
Ellington	20	36.5
Enfield	64	37.5
Fairfield	67	28.5
Farmington	20	20.8
Glastonbury	33	22.7
Granby	17	35.9
Greenwich	109	40.3
Griswold/Lisbon	33	52.3
Groton	199	113.9
Guilford	31	35.0
Hamden	166	83.4
Hartford	1730	271.9
Hebron	19	42.8
Killingly	42	59.6
Ledyard	70	103.2
Litchfield	11	32.4
Madison	17	20.1
Manchester/Bolton	255	109.2

Town	Number of Visits	1999-2000 Rate (per 10,000)
Mansfield	22	49.0
Marlborough	16	60.8
Meriden	393	152.5
Middletown	133	83.3
Milford	126	64.4
Monroe	24	25.2
Montville	43	59.4
Naugatuck	99	71.2
New Britain	415	138.4
New Fairfield	25	35.2
New Haven	1242	228.3
New London	210	202.2
New Milford	49	38.7
Newington	39	38.3
Newtown	30	23.9
North Branford	10	16.7
North Haven	30	34.8
Norwalk	201	62.9
Norwich/Preston	181	110.6
Old Saybrook	14	36.8
Orange	11	20.4
Plainfield	39	60.1
Plainville	26	42.3
Plymouth	36	72.3
Pomfret	17	101.4
Portland	16	42.1
Prospect	13	35.5
Putnam	14	40.5
Ridgefield	19	15.2
Rocky Hill	26	43.7
Seymour/Oxford	56	53.2
Shelton	65	43.1
Simsbury	34	29.5
Somers	14	39.4
South Windsor	50	44.6
Southbury	18	25.1
Southington	83	52.8
Sprague	15	115.7
Stafford/Union	23	46.1
Stamford	461	102.8
Stonington	19	29.3
Stratford	125	64.0
Thomaston	17	53.8
Thompson	11	30.4
Tolland	19	30.2
Torrington	104	76.5
Trumbull	41	27.0
Vernon	106	100.8

Town	Number of Visits	1999-2000 Rate (per 10,000)
Wallingford	81	46.9
Waterbury	874	176.3
Waterford	59	85.3
Watertown	32	36.0
West Hartford	116	49.6
West Haven	269	130.6
Westport	12	9.6
Wethersfield	48	53.8
Winchester	67	161.7
Windham	139	154.8
Windsor Locks	13	27.3
Windsor	65	56.4
Wolcott	25	37.2
Woodbridge/Bethany	31	48.9
Woodbury	10	26.5
Woodstock	16	52.0

Asthma Hospitalizations by Town
Children Age 0-14 Years, Connecticut 1999-2000

(Towns with less than 10 hospitalizations omitted from table)

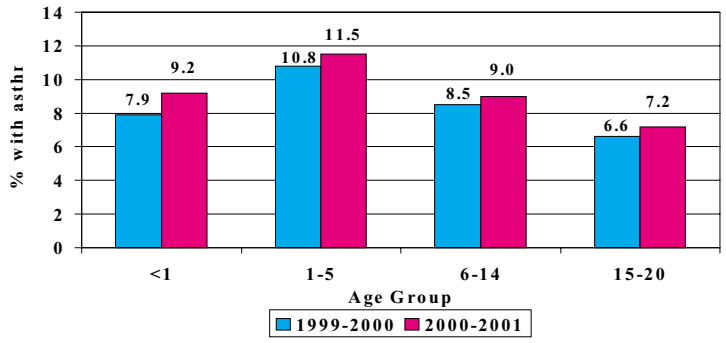
Town	Number of Admissions	1999-2000 Rate (per 10,000)
Ansonia	12	15.7
Bridgeport	211	30.6
Bristol	31	13.2
Cheshire	13	11.2
Colchester/Salem	14	14.8
Danbury	54	19.5
Darien	17	15.0
Derby	11	24.1
East Hartford	54	26.5
East Haven	20	18.9
Enfield	20	11.7
Fairfield	20	8.5
Greenwich	31	11.5
Griswold/Lisbon	11	17.4
Groton	21	12.0
Guilford	13	14.7
Hamden	49	24.6
Hartford	289	45.4
Killingly	12	17.0
Ledyard	11	16.2
Manchester/Bolton	34	14.6
Meriden	36	14.0
Middletown	18	11.3
Milford	20	10.2
Monroe	11	11.5
Montville	11	15.2
Naugatuck	22	15.8
New Britain	83	27.7
New Haven	425	78.1
New London	27	26.0
New Milford	16	12.6
Newtown	11	8.8
North Haven	12	13.9
Norwalk	75	23.5
Norwich/Preston	57	34.8
Plainfield	11	17.0
Ridgefield	10	8.0
Seymour/Oxford	10	9.5
Shelton	10	6.6
Southington	10	6.4
Stamford	91	20.3
Stratford	21	10.7
Torrington	17	12.5

Town	Number of Admissions	1999-2000 Rate (per 10,000)
Trumbull	11	7.2
Wallingford	18	10.4
Waterbury	190	38.3
Watertown	10	11.2
West Hartford	23	9.8
West Haven	110	53.4
Windham	38	42.3
Windsor	20	17.3
Woodbridge/Bethany	12	18.9

Estimated Prevalence of Asthma among Children in HUSKY A (Medicaid managed care)

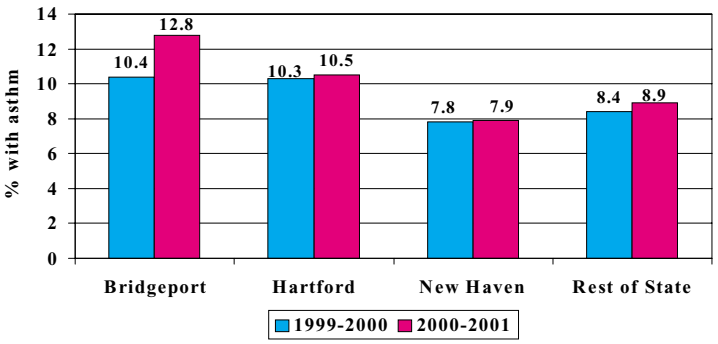
Since 1995, the Children's Health Council (CHC) has monitored the impact of Medicaid managed care on children's health services. Enrollment and encounter data have been used to estimate the prevalence of asthma and the rates of asthma-related health care utilization among children enrolled in HUSKY A (Medicaid managed care). The estimates provided below are based upon children under age 21, continuously enrolled in HUSKY A for Federal Fiscal Year (FFY) 2000 and FFY 2001.

Estimated Prevalence of Asthma by Age, Connecticut Children Enrolled in HUSKY A



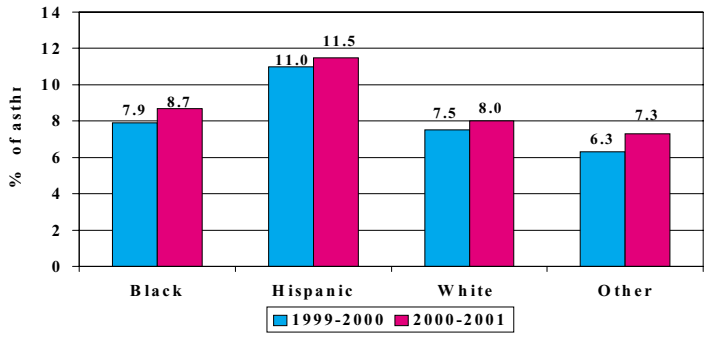
In 1999-2000 and 2000-2001, an estimated 8.8% and 9.4%, respectively, of children continuously enrolled in HUSKY A had asthma. The estimated prevalence of asthma was highest among the 1-5 year age group. In the 1-5 and 6-14 year age group, the estimated prevalence of asthma in 2000-2001 was significantly higher than in the previous year.

Estimated Prevalence of Asthma by Town of Residence, Connecticut Children Enrolled in HUSKY A



The prevalence of asthma was determined for children enrolled in HUSKY A living in several of the largest cities in Connecticut. In Bridgeport and Hartford, the estimated asthma prevalence was higher than in New Haven, which more closely resembled the rest of the state. Compared to 1999-2000, the estimated prevalence of asthma among children in Bridgeport was significantly higher in 2000-2001.

Estimated Prevalence of Asthma by Race/Ethnicity, Connecticut Children Enrolled in HUSKY A

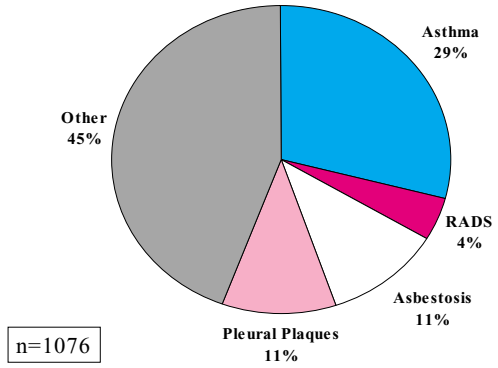


In 1999-2000 and 2000-2001, the estimated prevalence of asthma was highest among Hispanics. The prevalence among black children was significantly greater in 2000-2001 than in the previous year.

Occupational Disease Surveillance

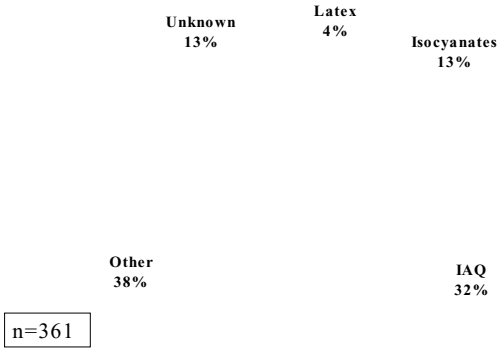
Connecticut General Statutes (CGS 31-40A) require that all physicians report any known or suspected cases of occupational disease; this information is then recorded in the Department of Public Health's Occupational Disease Surveillance System (ODSS). Approximately 2,000-2,500 reports of occupational disease are received each year. As with all occupational diseases and disorders, occupational asthma and Reactive Airway Dysfunction Syndrome (RADS) are believed to be underreported. (RADS is a form of occupational asthma resulting from a single exposure to a high level of irritants.) Nearly all occupational asthma reports in the ODSS come from occupational medicine clinics located throughout the state.

Occupational Asthma and RADS as a Percentage of Respiratory Disease and Disorders, 1990-2002



It is estimated that up to 15% of adult onset asthma is due to work-related exposures. Occupational asthma and RADS account for approximately one-third of all respiratory diseases and disorders reported to the ODSS. Each year approximately 30 new individuals are reported to have occupational asthma/RADS.

Reported Causes of Occupational Asthma and RADS, 1990-2002



In Connecticut, the most commonly identified reported cause of occupational asthma/RADS is poor indoor air quality (IAQ). This includes mold, dust, bioaerosols, cigar/cigarette smoke, poor ventilation, and renovation activities. Other commonly reported causes of occupational asthma/RADS are exposure to latex and isocyanates.

Technical Notes

Behavioral Risk Factor Surveillance System (BRFSS)

Adult Asthma:

The Behavioral Risk Factor Surveillance Survey (BRFSS) collects data from non-institutionalized adults, age 18 years and older, through monthly random digit dialed telephone surveys. The survey is coordinated and partially funded by the Centers for Disease Control and Prevention (CDC) and is conducted in all 50 states. Connecticut conducted 7,752 BRFSS surveys in 2001, including a minimum of 600 interviews in each county. Prevalence estimates for adults were determined with PC SAS®, version 8.02. SAS® does not produce accurate margins of error, since it does not account for the complex sample design of the BRFSS. The margin of error was estimated using SUDAAN® statistical software and was approximately plus or minus 1% for the largest sample of 7,752, with larger errors for smaller sample sizes. For analyses of the adult data, respondents with missing values were excluded from the analysis for that particular variable.

BRFSS Adult Asthma Questions:

1) *Have you ever been told by a doctor, nurse, or other health professional that you had asthma?*
2) *Do you still have asthma?*

Childhood Asthma:

Several questions pertaining to childhood asthma were asked in 2001.

2001 BRFSS Childhood Asthma Questions

1) *Earlier you said there were X children age 17 or younger living in your household. How many of these children have ever been diagnosed with asthma?*
2) *How many of these children still have asthma?*

In 1998 and 1999, the question was phrased differently: "How many persons in the household with asthma were age <5, 5-12, and 13-17 years?" Because the questions and criteria were changed between 1998-99 and 2001, no direct comparison should be made between the prevalence rates presented here and those previously released.

Results for children were weighted and adjusted to represent all households, rather than all adults in the state. SUDAAN® statistical software was used to compute the percent of children with asthma and the standard error. In addition, it should be noted that all demographic information reported pertains to the adult respondent and may not truly reflect the demographic characteristics of the child.

Hospitalization and Emergency Department Utilization Data

CHIME, Inc., an affiliate of the Connecticut Hospital Association, collects inpatient, ambulatory surgery, and emergency department (ED) data from all Connecticut acute-care hospitals on a voluntary basis. CHIME maintains a proprietary statewide healthcare information system consisting of clinical, financial, and patient demographic data for the purpose of providing comparative information to its members and other organizations.

Currently, data are available on hospital admissions and emergency department visits for children age 0-14 years in Connecticut. Hospital admission data are available from 1992-2000; emergency department data are available from 1995-2000.

There are several limitations that should be kept in mind when interpreting these data. These data represent hospital admissions or ED visits, not individuals. Since some children will be hospitalized or visit the ED more than once in a given year, the rates presented here overestimate the number of children using these services. In addition, Connecticut children who receive care at out-of-state facilities are not captured in this data.

Data for the US hospitalization rate were taken from the 2000 National Hospital Discharge Survey. At the time the US rate was calculated, 2000 Census data was not available. Therefore, the US rate was calculated using an estimate of the 2000 population based upon the 1990 Census. The Connecticut rates were calculated using 2000 Census data.

Children's Health Council – Medicaid Managed Care Data

The Children's Health Council (CHC) prepares a yearly report on asthma prevalence and asthma-related healthcare among children under the age of 21 who are continuously enrolled in HUSKY A (Medicaid managed care). The data presented here are from CHC's most recent report released in July 2002 covering Federal Fiscal Year (FFY) 2001. (The Federal Fiscal Year runs from October 1 – September 30.) To be included, children must have been continuously enrolled in HUSKY A between October 1, 2000 and September 30, 2001. The prevalence of asthma, defined as physician-diagnosed asthma recorded on an encounter record, was estimated by comparing the number of children receiving care for which an asthma diagnosis was reported to the total number of continuously enrolled children.

The methods used to calculate the estimates presented here affect the results and their interpretation. First, only continuously enrolled children are included in the analysis. Therefore, any changes in enrollment, access to care, and quality of care can affect prevalence estimates based on utilization of services. Furthermore, neither the severity of the disease nor adherence to treatment protocols can be determined using only administrative data. Third, the accuracy and completeness of the encounter data cannot be determined. Any changes in prevalence or utilization over time may be the result of changes in the quality of data submissions. Nevertheless, this method of tracking asthma prevalence and asthma-related health care utilization among children who are at increased risk is useful in conjunction with other surveillance activities.

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